SYSTEM, METHOD AND PROGRAM PRODUCT FOR SHARING INFORMATION

DESCRIPTION

BACKGROUND OF THE INVENTION

5

Field of the Invention

The present invention generally relates to electronic commerce (e-commerce) and, more particularly to electronically sharing technical information among suppliers, manufacturers and customers of a particular product development chain.

Background Description

10   In any large industry, such as the food industry, manufacturers purchase raw materials from suppliers, process the raw material to produce goods and, sell finished goods to customers. At each stage during production, volumes of data may be generated for different products, e.g., how to solve a particular manufacturing problem or, the best way to store the product. Specifications may be generated for finished products and

15   advance sheets may be available for planned products. Since one manufacturer's finished product may be the next manufacturer's raw material, passing some or all information collected on the product may be important to both parties.

Further, audits may be required to be done on one product several times. Each audit may be at considerable expense to the party being audited. Typically, audit results

20   are not generally available.

1410-67111   1

Currently, the food industry does not have a centralized repository that provides an all-encompassing platform for sharing technical information. This omission has created inefficiencies within the food industry because of redundancy and duplication of effort in the management and use of food-related technical information.

5   Thus, there is a need for providing suppliers, manufacturers and customers of a particular industry, such as the food industry, with a tool for managing and sharing specifications and other information in a standardized format.

SUMMARY OF THE INVENTION

It is therefore a purpose of the present invention to allow sharing of information
10   between suppliers, manufacturers and customers of a large industry;

It is yet another purpose of the present invention to improve synergy and efficiency in product development in a large industry;

It is yet another purpose of the present invention to provide a collaborative approach to solving industry technical problems;

15   It is yet another purpose of the present invention to share supplier audit results;

It is yet another purpose of the present invention to facilitate finding food product related topical information;

It is yet another purpose of the present invention to provide a standard format for specifications that will allow sharing of information between suppliers, manufacturers
20   and customers in the food industry;

It is yet another purpose of the present invention to facilitate collaboration on food technology among food manufacturers/suppliers, food industry service providers and customers.

The present invention is a member accessible information system for managing member information, and selectively providing member information to individual members. The members, typically belong to a common industry, such as the food industry and connect through remotely connected networked computers, such as over the Internet. Members may be food industry members including suppliers, manufacturers and customers, each accessing information supplied by members and maintained by the system. Members may search through previously authorized member provided information. The system includes a central storage which may be located on a database server and which stores product information, e.g., food product information and specifications. Members access the system through a web server. A security policy server verifies what product information and which specifications are to be available to each member. Specifications may be stored centrally or, distributed to member locations. An app server stores and selectively executes applications used by members. User security profiles are stored on and managed by a policy server. Each member's security profile indicates the level of authorization of the corresponding member. A personalization server may be included to record user member characteristics, i.e., content viewed by the member, and personalizes content to subsequently automatically make similar content available to the member. An ad server may be included to schedule, serve and track advertising content provided to members. Orders may be generated and placed automatically. Member use may be tracked to generate member bills automatically and bill individual members.

Advantageously, the preferred embodiments of the present invention provide large industries, such as the food industry, with a system having a broad platform for sharing technical information between suppliers, manufacturers and customers of the particular industry. A food product specifications are in a standard format to allow sharing of information between food industry suppliers, manufacturers and customers, thereby

1410-67111   3

facilitating food product related topical information distribution. Thus, the present invention reduces redundancy and duplication of effort within the food industry eliminating inefficiency in management and use of food-related technical information. Food product development synergy and efficiency is improved, providing a collaborative

5   approach to solving food industry technical problems.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing and other objects, aspects and advantages will be better understood from the following detailed preferred embodiment description with reference to the drawings, in which:

10   Figure 1shows a first preferred embodiment system with a distributed specification storage, wherein specifications are stored, locally, with individual participants;

Figure 2 is an example of a second preferred embodiment that, unlike the first preferred embodiment, includes a centralized specification storage with all searchable

15   specifications being stored on the central site;

Figure 3 shows a third preferred embodiment that includes aspects of both the first and second preferred embodiments.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS OF THE INVENTION

20   Referring now to the drawings, and more particularly, Figure 1shows a first preferred embodiment system 100 with a distributed specification storage, wherein specifications are stored, locally, with individual participants. A typical specification includes multiple predefined sections including a header, text, references, and property.

The sections each include predefined fields which include basic data types text, number and date. Ordinarily, the system does not have a specification generation workflow component and all specifications that are submitted to the system are complete, final product specifications. It should be noted that although the preferred embodiments are described hereinbelow with reference to the food industry, this is for example only and not intended as a limitation. Thus, the system and method of the present invention may be applied any appropriate industry, e.g., the medical industry or the drug industry. Also, as used herein, participant refers to any party using or otherwise participating in the use of the system, including, but not limited to manufacturers, suppliers, service providers and any customers thereof. Further, user and participant are used interchangeably unless otherwise indicated.

So, participating manufacturers and suppliers at local terminals 102, 104, 106, and 108 post the uniform resource locator (URL) of extensible Markup Language (XML) web pages 110, 112, 114, 116 making related relevant information available over the network 120, e.g., the Internet. Local terminals 102, 104, 106, 108 may each be a personal computer (PC), a network computer or the participant's server. The system 100 includes an XML Crawler and Search Engine 122 searching posted specifications and other information available from industry sources. Individual participants access the central site or the system through a Firewall 124. All specifications that are accessible from the central site are XML documents and, in this embodiment, are stored on participant's web servers, e.g., 102, 104, 106 or 108, at participating client locations. Technical information and other related documents are stored, locally, in central storage 126.

A Web Server 128 stores static content (e.g., icons, images and unchanging HTML pages) that is available to participants. A suitable Web Server 128 system is the Netra t1 from Sun Microsystems, with a 360 MHz UltraSparc microprocessor, 512MB

random access memory (RAM), a 2 by 18GB OS RAID 1 configuration, running Solaris 2.6 and NES. Examples of suitable web servers applications include Apache web server or Netscape Enterprise Server. An App Server 130 executes functional applications stored thereon, e.g., training modules in PowerPoint, enhanced searching capability. The

5   particular applications are customized as required for the particular on site requirements. A suitable App Server 128 is a E250 from Sun Microsystems, with two 400 MHz UltraSparc microprocessors, 512MB random access memory (RAM), a 2 by 18GB OS RAID 1 configuration, running Solaris 2.6 and NES. Websphere from IBM Corporation and Netscape iPlanet are examples of suitable App Servers 130.

10   A Database Server 132 includes central storage 126 and manages product information as well as procedures and functions stored therein. Oracle 8i Enterprise Edition is a suitable database server 132. Information that may be stored on the database server 132 includes, for example, links and indexes for XML documents previously found by the crawler, certificates of analysis for various products, Hazard Analysis Critical

15   Control Point (HACCP) templates and documents 134, quality monitoring documents 136, and various relevant technical papers 138. Also, product related publications 140, technical information 142, governing regulations 144, ongoing research lists 146, as well as contact lists 148 may be included. In addition, audit results 150 for various products and Kosher/Halal compliance testing 152 may be included.

20   A Security Policy Server 154 maintains user security profiles in a security database 156 entered through a Security Administration interface 158. Security profiles may include such things as company name and position (e.g., marketing representative, buyer, etc.), products supplied or manufactured and any basic requirements. Netegrity Siteminder is suitable Security Policy Server 154. The Security Policy Server 154

manages resource access insuring that participating users receive access only to authorized resources while protecting unauthorized resources and application functions.

A Content Server 160, such as Interwoven or the Vignette Content Server, interfaces between the Web Server 128 and a Content Management Engine 162. A

5   Content Administration Interface 164 allows a content manager, editor and/or writers to input content that is identified, gathered, organized and prepared for the site. Content may be in the form of text, financial data or images and can include help screen information, section introductions, periodical articles, streaming content, etc. The Content Management Engine 162 also provides content management, workflow and

10   delivery. Content Management Engine 162 also interfaces with Personalization Engine/Server 166, which personalizes each user's web experience. Content and navigation characteristics dynamically extracted from searches performed by the particular user and adapted for the user. A Personalization Administration interface 168 allows an administrator to enter, remove or modify personalization as deemed necessary.

15   An Ad Engine/Server 170, e.g., from Engage, manages, schedules, targets, serves and tracks advertising content. Banner ads may be displayed to participants at various points (e.g., upon logging in, during use, upon logging out, etc.) For a source of additional income and/or to help defray operating costs. Accordingly, an Ad Administration interface 172 is included for providing advertisements and administering

20   to ad content.

Web Server Logs 174 are included for logging and tracking system activity, in particular for tracking member/participant use and in generating bills based on such use. A search engine 176 with full indexing and search capability is included for searching documents stored in the central site and, in particular, in the central storage 126 through

1410-67111   7

the App Server 130. The Verity Information Server is a suitable search engine 176. Also, a Custom Functionality Administration Interface 178 is included for selectively administering to system unique features provided in custom functional applications of the App Server 130. Optionally, an e-Procurement Engine interface 180 may be included for

5   conducting transactions interactively amongst participants. Transactions may include things such as ordering materials (e.g., from an automatically generated bill of materials), selling products, shipping, billing member/participants and collecting payments electronically. Participants may also be billed for system use.

Regarding XML Crawler and Search Engine 122, the XML crawler continuously

10   searches for completed XML specification documents and indexes any newly encountered XML documents storing the search results in Index Server 182. In this first embodiment, the index and links for the XML documents are stored in the Index Server 182 at the central site; however, as noted above, the actual XML documents are stored on web servers 102, 104, 106, 108 of participating clients. So, in response to a search

15   request, the XML search engine searches through indexed documents listed in Index Server 182, selects documents matching search criteria and retrieves selected XML documents from the particular participant's server 102, 104, 106, 108. Thunderstone or Ultraseek are a suitable crawler and search engine combination 122. Participants must provide a local web server (which may also be the participant's point of entry 102, 104,

20   106, 108 to the system) where XML documents are archived and accessible by the XML crawler in order to participate in the first embodiment system 100.

XML specifications may be manually formatted as XML documents or, generated automatically from a non-XML format specification. Typically, specifications are stored, currently, as text or in a relational database form and parsed information may include

25   sections for a header, a reference, property and text. An application programming

interface (API) may be created to perform automatic specification migration from data organized into predefined fields. After parsing data, a participant provides the parsed data in predefined specification textual fields that may include time/data stamps. The API then converts the parsed data to an XML document.

5   Figure 2 is an example of a second preferred embodiment 200 that is substantially similar to the first embodiment 100 but, unlike the first preferred embodiment, includes a centralized specification storage with all searchable specifications being stored on the central site. In this embodiment, individual participating customers or partners are responsible for transforming existing specifications into a defined format as directed by

10   the central site. Transformed specifications are then provided for storage at the central site. Since this second embodiment 200 is substantially similar to the first embodiment, like elements are numbered identically and reference is made to their description hereinabove.

       Since specifications are stored centrally in this embodiment 200, the XML crawler

15   and search engine 122 is unnecessary and, so, is omitted. Further, data is exchanged with participants at local terminals 102, 104, 106, 108 through an XML-based API 202, 204, 206, 208. Thus, in addition to the elements in common with the first embodiment 100, the second preferred embodiment system includes: an XML-based API 202, 204, 206, 208 that allows participating customers/partners to exchange data; a specification creation

20   tool 210 that can be useable, especially by smaller businesses, for creating specifications; and, specification storage 212 for storing specifications in the central database 132. Participants can transfer their completed specifications in XML format to the central database 126 using the XML based API.

To compensate for any additional load that must be bourne by the central site, in this second embodiment 200, two servers may be used for each of the Web Server 128, the App Server 130 and the database server 132. Two servers provide better load distribution for each of the Web Server 128 and the App Server 130. Also, two servers

5   operating in parallel are better able to handle the storage demands placed on database server 132 by centrally storing specifications. In addition, unlike the first preferred embodiment 100, the second embodiment 200, also includes an automatic specification generation tool 210 for participants' convenience. XML specifications are stored in specification storage 212. Data stored in the central storage 126 may be parsed in XML

10   parser 214 for incorporation in XML specifications. Thus, companies that may not own a specification generation tool can automatically create XML specification documents in this embodiment 200, rather than manually or by other more taxing means as may be necessary in the first preferred embodiment 100.

The specification generation tool 210 reads specification data from the original

15   repository and parses the data for each specification into relevant data fields. Parsed data may also be extracted from central storage 126. Then, XML documents are generated from the parsed data. The format of the XML document is validated. Valid documents are stored in the specification storage 212.

Figure 3 shows an example of a third preferred embodiment 300 that includes

20   aspects of both the first and second preferred embodiments. In this embodiment specifications are stored both locally at participants' locations and centrally at the central site. The centralized web server function of web server 128 in the first embodiment 100 is distributed onto two identical independent web servers 302, 304. Both web servers 302, 304 are connected between Firewall 124 and App Server 130. However, Content

25   Server 160 and Ad Server 170 are connected only to web server 304, while Security

Policy Server 154 is connected only to web server 302. Neither web server 302 or 304 communicates directly with the other's corresponding connected services 154, 160 and 170. The third preferred embodiment 300 also includes on-site XML document storage 306, 308 similar to that of the second embodiment 200, with documents stored in

5   centrally located storage 306, 308 instead of being distributed at individual participants' web addresses or URL. Web server 302 is also connected directly to XML Repository 306 and indirectly to second XML Repository 308 through XML Repository 306. As noted above, this third embodiment 300 is a hybrid of the first two embodiments 100, 200 and, so, includes a specifications XML Crawler and Search Engine 122. XML

10   Repositories 306, 308 are therefore, connected between web server 302 and spec XML Crawler and Search Engine 122.

Thus, participants individually using terminals 102, 104, 106, 108 can log in through the Internet 120, through Firewall 124 to web servers 302, 304, retrieving stored information and passing documents and other information to the system 300. Requests

15   for XML related services, such as searches, are passed through web server 302 to App Server 130 and then, to XML Crawler and Search Engine 122. Content management, workflow and characteristics of content tracking are interfaced through web server 304.

Advantageously, the preferred embodiments of the present invention provide large industries, such as the food industry, with a system having a broad platform for sharing

20   technical information between suppliers, manufacturers and customers of the particular industry. Food product specifications are in a standard format to allow sharing of information between authorized food industry suppliers, manufacturers and customers, thereby facilitating food product related topical information distribution. Audit results may be stored and made available as XML documents, thereby, reducing food product

25   audit costs. Thus, the present invention reduces redundancy and duplication of effort

within the food industry eliminating inefficiency in management and use of food-related technical information. Food product development synergy and efficiency is improved, providing a collaborative approach to solving food industry technical problems.

While the invention has been described in terms of preferred embodiments, those
5   skilled in the art will recognize that the invention can be practiced with modification within the spirit and scope of the appended claims.